

*Contents*

1. Introduction. Characteristics of Organic Compounds	1
2. Introduction to Some Important Classes of Organic Compounds. Sources of Carbon Compounds	27
3. Atomic and Molecular Structure and Chemical Bonds	42
4. Bond Making and Breaking. Acids and Bases	74
5. The Naming of Organic Compounds	101
6. The Hydroxyl Group. The Displacement Reaction in Organic Chemistry	116
7. Alcohols as Nucleophilic Reagents. Preparation and Reactions of Alcohols	150
8. The Carbon–Carbon Double Bond. Unsaturated Compounds	182
9. The Concept of Resonance and Its Application to Organic Chemistry	219
10. The Carbonyl Group. Aldehydes and Ketones, and Addition Reactions of Carbonyl Compounds	249
11. Acidity of Hydrogen Linked to Carbon. Aldol Condensations	282
12. Carboxylic Acids and Acid Derivatives	310
13. Aldol Condensations of Acid Derivatives. Reactions of $\beta$ -Keto Esters and Malonic Esters	344
14. Organometallic Compounds. The Grignard Reagent and Related Substances	359
15. Stereochemistry. The Arrangement of Atoms in Space	387
16. Carbohydrates. The Chemistry of Sugars and Allied Compounds	430

17. Ring Formation and Conformation of Organic Molecules	470
18. Aromatic Compounds and the Structure of Benzene	500
19. Electrophilic Substitution into the Aromatic Ring	513
20. The Effect of Substituents upon the Electrophilic Substitution Reaction	533
21. Electron Supply and Demand in Electrophilic Substitution	546
22. Aromatic Halogen Compounds. Nucleophilic Aromatic Substitution	567
23. Aromatic Hydrocarbons and Carbonyl Compounds	580
24. Aromatic Nitro Compounds	597
25. Aromatic Amines	610
26. Reactions of Amines with Nitrous Acid. Diazo Compounds	620
27. Phenols and Hydroxycarbonyl Compounds	643
28. Rearrangements During the Reactions of Organic Compounds	662
29. Heterocyclic Compounds. Alkaloids	683
30. Terpenes, Steroids, and Carotenoids. Biogenesis of Organic Compounds	709
31. Physiologically Active Compounds. Drugs and Chemotherapy	730
32. Proteins, Amino Acids, Enzymes, and Vitamins	747
33. Natural and Synthetic Polymers	771
34. The Determination of Structure of Organic Compounds	783
Appendix A: Summary of the Properties, Preparation, and Reactions of the Chief Functional Classes of Organic Compounds	796
Appendix B: Fifty Selected Laboratory Procedures for the Preparation of Compounds	807
Appendix C: Answers to Questions (exercises within text omitted)	809
Index	835